SEQUENCE LISTING

<110> Rafalski, J. Antoni
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Miao, Guo-Hua

<120> PLANT VITAMIN E BIOSYNTHETIC ENZYMES

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<211> 191
<212> PRT
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1 5 10 15

Gly Leu Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln
20 25 30

Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly
35 40 45

Glu His Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val
50 55 60

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Ala Ala Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn
 65                  70                  75                  80

Leu Asp Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu
                85                  90                  95

Arg Arg Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser
            100                 105                 110

Asp Tyr Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr
        115                 120                 125

Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys
    130                 135                 140

Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp
145                 150                 155                 160

Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr
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Lys Lys Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro
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<210> 3
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<212> DNA
<213> Oryza sativa

<400> 3

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gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
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<210> 4
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<212> PRT
<213> Oryza sativa

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Pro Gly Ala Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu
            20                  25                  30

Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg
        35                  40                  45

Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
    50                  55                  60

Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp
 65                  70                  75                  80
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Trp Ser

<210> 5
<211> 592
<212> DNA
<213> Oryza sativa

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<210> 6
<211> 144
<212> PRT
<213> Oryza sativa

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1 5 10 15

His Ala Ala Ala Ala Thr Gly Ala Leu Ala Pro Leu His Pro Leu Leu
20 25 30

Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
35 40 45

Leu Cys Leu His His His Arg Arg Arg Arg Arg Ser Ser Arg Arg Thr
50 55 60

Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
65 70 75 80

Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
85 90 95

Asp Glu Xaa Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
100 105 110

His Gly Phe Tyr Asp Ala Gly Glu Gly Ala Ser Met Ser Asp His Arg
115 120 125

Arg Ala Pro Val Arg Met Ile Glu Asp Leu Ala Phe Ala Ala Ser Pro
130 135 140

<210> 7
<211> 1331
<212> DNA
<213> Glycine max

<400> 7
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ttcgggcatc ggcagcgagc tcggagagag gggagatagt attggagcag aagccgaaga 180
aggatgacaa gaagaagctg cagaagggaa tcgcagagtt ttacgacgag tcgtctggct 240
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cctctgtttc tgaggagcgt agtaaatggc ccaagagtat agttgatgtt gggtgtggca 420
taggtggcag ctctagatac ctggccaaga aatttggagc aaccagtgta ggcatcactc 480
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ttggccctga cgaacaatcc ttacatccat gggagcaaga tctcttaaag aagatttgcg 780
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aaaaaaaaaa a 1331

<210> 8
<211> 349
<212> PRT
<213> Glycine max

<400> 8
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Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly
20 25 30

Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ala Ser Ser Glu Arg
35 40 45

Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys
50 55 60

Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp
65 70 75 80

Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp
85 90 95

Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile
100 105 110

Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp
115 120 125

Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
130 135 140

Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser
145 150 155 160

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Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu
                165                 170                 175

Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Gln Gln Pro Phe
            180                 185                 190

Ser Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
        195                 200                 205

Met Pro Asp Lys Ala Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala
    210                 215                 220

Pro Gly Ala Ile Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Gly
225                 230                 235                 240

Pro Asp Glu Gln Ser Leu His Pro Trp Glu Gln Asp Leu Leu Lys Lys
                245                 250                 255

Ile Cys Asp Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ser Asp Tyr
            260                 265                 270

Val Lys Leu Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Ser Glu Asp
        275                 280                 285

Trp Ser Arg Phe Val Ala Pro Phe Trp Pro Ala Val Ile Arg Ser Ala
    290                 295                 300

Phe Thr Trp Lys Gly Leu Ser Ser Leu Leu Ser Ser Gly Lys Leu Gly
305                 310                 315                 320

Ile Tyr Ile Ala Phe Gln Lys Gln Thr Pro Pro Ser Ser Ile Ala Thr
                325                 330                 335

Cys Lys Ser Tyr Val Thr Asp His Tyr Phe His Thr Arg
            340                 345
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<210> 9
<211> 1011
<212> DNA
<213> Triticum aestivum

<400> 9

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atgttggatg cggaatcggt ggtagctcaa gatacctggg cgaacaaata tggagcacaa  240
tgctctggga tcacattgac ccagtgcaag ctgagagagg aaatgccctc gcggcagcgc  300
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gatgggcatt tgatcttgtc cgggnccatg ggagantggt gacacatgcc gaacaaacag  420
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agaaggagaa cctggaggcc gcatcgccca agagtggtag aatagaacca tgtgattgga  900
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<210> 10
<211> 293
<212> PRT
<213> Triticum aestivum

<400> 10

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Gly Phe Tyr Asp Ser Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg
            20                  25                  30

Ala Gln Ile Arg Met Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro
        35                  40                  45

Asp Asp Pro Thr Asn Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly
    50                  55                  60

Ile Gly Gly Ser Ser Arg Tyr Leu Gly Glu Gln Ile Trp Ser Thr Met
65                  70                  75                  80

Leu Trp Asp His Ile Asp Pro Val Gln Ala Glu Arg Gly Asn Ala Leu
                85                  90                  95

Ala Ala Ala Gln Gly Val Val Arg Thr Arg Phe Phe Pro Ile Ala Asp
            100                 105                 110

Leu Trp Glu Gln Pro Phe Pro Gly Trp Ala Phe Asp Leu Val Xaa Xaa
        115                 120                 125

Xaa Xaa Xaa Xaa Xaa His Met Pro Asn Lys Gln Lys Phe Val Ser Glu
    130                 135                 140

Leu Ala Arg Val Ala Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp
145                 150                 155                 160

Cys His Arg Asn Leu Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu
                165                 170                 175

Leu Asn Leu Leu Lys Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp
            180                 185                 190

Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu
        195                 200                 205

Asp Ile Lys Thr Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro
    210                 215                 220

Ala Val Ile Gln Ser Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu
225                 230                 235                 240

Arg Ser Gly Trp Lys Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met
                245                 250                 255

Ile Gln Gly Tyr Lys Lys Gly Leu Ile Lys Phe Lys His His His Leu
            260                 265                 270

Pro Gln Thr Pro Ser Ser His Arg Arg Arg Thr Trp Arg Pro His Arg
        275                 280                 285
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Pro Arg Val Val Glu
290

<210> 11
<211> 432
<212> DNA
<213> Oryza sativa

<400> 11
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cctcctccgc tccgcctccg tcgcgttcct cttcaccgcc ccctacggcg gcgaccacgg 180
cgtcggcgcg gacgcggcca ccaccgcctc catcccttcc ttctcccctt cctttctccc 240
cgctcctgga tcaggccaca ggaggggagc gatggtggag gcggccaccg taggcggcgg 300
aggtggcgtt cctcctccct agctcccaga cccggctgga ggagggagtg atggtggcgg 360
naggcggngc tccctcctct ccctccctcc tcctcacaat ntggccggag ggaggaangg 420
gccgcggncc aa 432

<210> 12
<211> 75
<212> PRT
<213> Oryza sativa

<400> 12
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1 5 10 15

Ala Phe Ala Leu Gly Ala Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr
20 25 30

Gly Asn Ser Ala His Ala Ser Leu Leu Leu Arg Ser Ala Ser Val Ala
35 40 45

Phe Leu Phe Thr Ala Pro Tyr Gly Gly Asp His Gly Val Gly Ala Asp
50 55 60

Ala Ala Thr Thr Ala Ser Ile Pro Ser Phe Ser
65 70 75

<210> 13
<211> 628
<212> DNA
<213> Oryza sativa

<400> 13
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ggacgtgggc accgccgaga gcggcctcaa ctcggtggtg ctcgccaaca acgcggagac 180
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gctcgggacg ctganggaga tgccnggcgc ctccgcatgg gcggttcgat tcttgggccc 360
gccgccgcca actactacga cggctgcgcg gcgcnccggg acttctctcg ggagagcaat 420
taacaatgcc aagactcngg tgtcctggac aaggatacaa gggtttccaa tnttaacaag 480
cattgaanag nnactttctg gngagatcaa gatggtgatg aaagtnaatg gaagntncaa 540
aggggntcgc ggttggaaga atntcggctt aatcataggg tngaaacctn agcacagcct 600
anttaggtca gagatgngcn ganaaatt 628

<210> 14
<211> 123

<212> PRT
<213> Oryza sativa

<400> 14
Tyr Gly Leu Arg Arg Phe Asp His Val Val Gly Asn Val Pro Glu Leu
1 5 10 15

Ala Pro Val Ala Ala Tyr Ile Ser Gly Phe Thr Gly Phe His Glu Phe
20 25 30

Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu Ser Gly Leu Asn
35 40 45

Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu Leu Pro Leu Asn
50 55 60

Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile Gln Thr Tyr Leu
65 70 75 80

Asp His His Gly Gly Pro Gly Val Gln His Ile Ala Leu Ala Ser Asp
85 90 95

Asp Val Leu Gly Thr Leu Xaa Glu Met Pro Gly Ala Ser Ala Trp Ala
100 105 110

Val Arg Phe Leu Gly Pro Pro Pro Pro Thr Thr
115 120

<210> 15
<211> 1027
<212> DNA
<213> Glycine max

<400> 15
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taagtcggac cgctttcaag tcaaccgctt ccaccacatc gagttctggt gcaccgatgc 180
caccaacgcc tctcgccgat tctcttgggg acttggaatg cctattgtgg caaaatctga 240
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cgtccgcgcc atcgccttgg aagtcgccga cgcggaagcc gctttcagcg ccagcgtcgc 480
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acgtttg 1027

<210> 16
<211> 276
<212> PRT
<213> Glycine max

<400> 16

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Ala Gln Ala Gln Pro Gly Phe Lys Leu Val Gly Phe Lys Asn Phe Val
            20                  25                  30

Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His
        35                  40                  45

Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser
    50                  55                  60

Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly
65                  70                  75                  80

Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe
                85                  90                  95

Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala
            100                 105                 110

Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala
        115                 120                 125

Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val
    130                 135                 140

Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu
145                 150                 155                 160

Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu
                165                 170                 175

Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp
            180                 185                 190

Ala Ala Pro Gln Ala Pro His Ala Asp Xaa Ser Arg Trp Phe Leu Pro
        195                 200                 205

Gly Phe Glu Ala Ala Ala Ser Ser Ser Ser Phe Pro Glu Leu Asp Tyr
    210                 215                 220

Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
225                 230                 235                 240

Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala
                245                 250                 255

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser
            260                 265                 270

Val Val Leu Ala
        275
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<210> 17
<211> 511
<212> DNA
<213> Vernonia mesipifolia

<400> 17
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tgaagtcgat gacgccgaat tagctttctc cgtcagcgtc tctcacggcg ctaaaccctc 120
cgctgctcct gtaacccttg gaaacaacga cgtcgtattg tctgaagtta agctttacgg 180
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ccggtgtacg gaanaaaagg aagagccaga t 511

<210> 18
<211> 170
<212> PRT
<213> Vernonia mesipifolia

<400> 18
His Thr Asp Cys Arg Asn Phe Thr Ala Ser His Gly Leu Ala Val Arg
1 5 10 15

Ala Ile Ala Ile Glu Val Asp Asp Ala Glu Leu Ala Phe Ser Val Ser
20 25 30

Val Ser His Gly Ala Lys Pro Ser Ala Ala Pro Val Thr Leu Gly Asn
35 40 45

Asn Asp Val Val Leu Ser Glu Val Lys Leu Tyr Gly Asp Val Ala Phe
50 55 60

Arg Tyr Ile Ser Tyr Lys Asn Pro Asn Tyr Thr Ser Ser Phe Leu Pro
65 70 75 80

Gly Phe Glu Pro Val Glu Lys Thr Ser Ser Phe Tyr Asp Leu Asp Tyr
85 90 95

Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
100 105 110

Ser Ala Val Asp Tyr Val Lys Ser Phe Thr Gly Phe His Glu Phe Ala
115 120 125

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Arg Glu Leu Asn Ser
130 135 140

Val Val Leu Ala Cys Asn Ser Glu Met Val Leu Ile Pro Met Asn Glu
145 150 155 160

Pro Val Tyr Gly Xaa Lys Gly Arg Ala Arg
165 170

<210> 19
<211> 1165
<212> DNA
<213> Triticum aestivum

<400> 19
caagaagcga acacacacca tgccgcccac ccccaccacc cccgcagcca ccggcgccgc 60
cgcggtgacg ccggagcacg cgcggccgcg ccgaatggtc cgcttcaacc cgcgcagcga 120
ccgcttccac acgctcgcct tccaccacgt cgagttctgg tgcgcggacg ccgcctccgc 180
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cgccgcgcgc cggttctccg cggaccacgg gctcgcggtg cgctccatag cgctgcgcgt  420
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ccccgtggac ctcggccgcg gcttcggctt tgcggaggtc gagctctacg gcgacgtcgt  540
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taacacggag gacgtgggca cggccgagag cgggctcaac tcgatggtgc tcgccaacaa  780
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gatacagacg ttcctggaac accacggcgg ctcgggcgtg cagcacatcg cggtggccag  900
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<210> 20
<211> 179
<212> PRT
<213> Triticum aestivum

<400> 20

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Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Val
 1               5                  10                  15

Thr Pro Glu His Ala Arg Pro Arg Arg Met Val Arg Phe Asn Pro Arg
            20                  25                  30

Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
        35                  40                  45

Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
    50                  55                  60

Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
65                  70                  75                  80

Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
                85                  90                  95

Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
            100                 105                 110

Ala Asp Ala Ala Arg Arg Phe Ser Ala Asp His Gly Leu Ala Val Arg
        115                 120                 125

Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
    130                 135                 140

Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
145                 150                 155                 160

Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
                165                 170                 175

Phe Val Ser
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<210> 21
<211> 1102
<212> DNA
<213> Zea mays

<220>
<221> unsure
<222> (454)

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<220>
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<400> 21
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gccgtcgtca gcctgcgtcc gatggcctcg tcgacggctc aggcccccgc gacggcgccg 180
ccgggtctga aggagggcat cgcggggctg tacgacgagt cgtcggggct gtgggagaac 240
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gatcaccgcc gcgcccagat ccgcatgatc gaggaggcgc tcgccttcgc cggtgtccca 360
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<210> 22
<211> 352
<212> PRT
<213> Zea mays

<220>
<221> UNSURE
<222> (152)

<400> 22
Met Ala His Ala Ala Leu Leu His Cys Ser Gln Ser Ser Arg Ser Leu
1 5 10 15

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Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro
            20                  25                  30

Arg His Ser Arg Arg Leu Arg Arg Ala Val Val Ser Leu Arg Pro Met
        35                  40                  45

Ala Ser Ser Thr Ala Gln Ala Pro Ala Thr Ala Pro Pro Gly Leu Lys
    50                  55                  60

Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu Trp Glu Asn
65                  70                  75                  80

Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Ser Glu Ala
                85                  90                  95

Ala Ser Met Ala Asp His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu
            100                 105                 110

Ala Leu Ala Phe Ala Gly Val Pro Ala Ser Asp Asp Pro Glu Lys Thr
        115                 120                 125

Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
    130                 135                 140

Tyr Leu Ala Lys Lys Tyr Gly Xaa Gln Cys Thr Gly Ile Thr Leu Ser
145                 150                 155                 160

Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly Leu
                165                 170                 175

Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe
            180                 185                 190

Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
        195                 200                 205

Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala
    210                 215                 220

Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Asp
225                 230                 235                 240

Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu Arg Arg
                245                 250                 255

Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr
            260                 265                 270

Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala Asp
        275                 280                 285

Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala
    290                 295                 300

Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp Lys Thr
305                 310                 315                 320

Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr Lys Lys
                325                 330                 335
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Gly Leu Ile Lys Phe Thr Ile Ile Thr Cys Arg Lys Pro Gly Ala Ala
340 345 350

<210> 23
<211> 521
<212> DNA
<213> Oryza sativa

<220>
<221> unsure
<222> (269)

<220>
<221> unsure
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<220>
<221> unsure
<222> (514)

<400> 23
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gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180
ccttctgatt atgtcaaaat tgccgagtca ctgtctcttg aggatataag gacagctgat 240
tggtcaagag aacgtcgccc caatccggnc tgcnggttat taaatnaagc aattgacatg 300
gnaagggtta actttctcct ggctaagaan tgggtgggaa gacgattaag aaggtggaat 360
gggtgatgcc tccggatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420
caacctgtnc caaagncccg aaacaacgca ataatacccc antaatnaaa ttncgctcct 480
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<210> 24
<211> 172
<212> PRT
<213> Oryza sativa

<400> 24
Phe Arg His Gly His Ala Leu Ala Gln Pro Phe Pro Asp Gly Gln Phe
1 5 10 15

Asp Leu Val Trp Ser Met Glu Ser Asp Glu His Met Pro Asp Lys Arg
20 25 30

Gln Phe Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly Ala Arg Ile
35 40 45

Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu Pro Ser Glu Glu Ser
50 55 60

Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg Ile Cys Asp Ala Tyr
65 70 75 80

Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu
85 90 95

Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser Glu Asn Val
100 105 110

Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys Gly
115 120 125

Leu Thr Ser Leu Leu Arg Ser Gly Trp Glu Thr Val Arg Gly Ala Met
130 135 140

Val Met Pro Leu Val Ile Glu Gly Tyr Lys Lys Gly Leu Ile Lys Phe
145 150 155 160

Pro Ile Ile Thr Cys Arg Lys Pro Glu Thr Thr Gln
165 170

<210> 25
<211> 464

<212> DNA
<213> Oryza sativa

<400> 25
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cgtcatctct gcgcctcggc ttcccctcgc gccggcctct gcctccacca ccaccgccgc 120
cgccgccgca gcagccggag gacgaaactc gccgtgcgcg cgatggcacc gacgttgtcc 180
tcgtcgtcga cggcggcggc agctcccccg gggctgaagg agggcatcgc ggggctctac 240
gacgagtcgt ccggcgtgtg ggagagcatc tggggcgagc acatgcacca cggcttctac 300
gacgccggcg aggccgcctc catgtccgac caccgccgcg cccagatccg catgatcgag 360
gaatccctcg ccttcgccgc cgttccccga tgatgcgggt aacaaaccca aaagtgttat 420
ttactgtttg gtgttgcaaa tgggggtacc tccaaaaaac tttg 464

<210> 26
<211> 128
<212> PRT
<213> Oryza sativa

<400> 26
Ala Arg Val Gln Pro Thr Gly Ala Leu Ala Pro Leu His Pro Leu Leu
1 5 10 15

Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly
20 25 30

Leu Cys Leu His His His Arg Arg Arg Arg Arg Ser Ser Arg Arg Thr
35 40 45

Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr
50 55 60

Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr
65 70 75 80

Asp Glu Ser Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His
85 90 95

His Gly Phe Tyr Asp Ala Gly Glu Ala Ala Ser Met Ser Asp His Arg
100 105 110

Arg Ala Gln Ile Arg Met Ile Glu Glu Ser Leu Ala Phe Ala Ala Val
115 120 125

<210> 27
<211> 1189
<212> DNA
<213> Glycine max

<400> 27
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ttcccaatcc cctcgcactt tcgccagaat ccgggtcgga cccaggtcgt gggctcctat 120
tcgggcatcg gcagcgagct cggagagagg ggagatagta ttggagcaga agccgaagaa 180
ggatgacaag aagaagctgc agaagggaat cgcagagttt tacgacgagt cgtctggctt 240
atgggagaac atttggggcg accacatgca ccatggcttt tatgactcgg attccactgt 300
ttcgctttcg gatcatcgtg ctgctcagat ccgaatgatc caagagtctc ttcgctttgc 360
ctctgtttct gaggagcgta gtaaatggcc caagagtata gttgatgttg ggtgtggcat 420
aggtggcagc tctagatacc tggccaagaa atttggagca accagtgtag gcatcactct 480
gagtcctgtt caagctcaaa gagcaaatgc tcttgctgct gctcaaggat tggctgataa 540
ggtttccttt caggttgctg acgctctaca gcaaccattc tctgacggcc agtttgatct 600
ggtgtggtcc atggagagtg gagagcatat gcctgacaaa gctaagtttg ttggagagtt 660

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agctcgggta gcagcaccag gtgccattat aataatagta acatggtgcc acagggatct  720
tggccctgac gaacaatcct tacatccatg ggagcaagat ctcttaaaga agatttgcga  780
tgcatattac ctccctgcct ggtgctcaac ttctgattat gttaagttgc tccaatccct  840
gtcacttcag gacatcaagt cagaagattg gtctcgcttt gttgctccat tttggccagc  900
agtgatacgc tcagccttca catggaaggg tctatcttca ctcttgagca gtggacaaaa  960
aacgataaaa ggagctttgg ctatgccatt gatgatagag ggatacaaga aagatctaat 1020
taagtttgcc atcattacat gtcgaaaacc tgaataaatg gagaggcagg attactttta 1080
tagaatgaac caagtttcca acaggtcgtt tatttcgata gttgagaaac aagagaaaaa 1140
ataaatgaaa ggggttgttc gattttaaaa aaaaaaaaaa aaaaaaaaa              1189
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<210> 28
<211> 350
<212> PRT
<213> Glycine max

<400> 28

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Met Ala Thr Val Val Arg Ile Pro Thr Ile Ser Cys Ile His Ile His
  1               5                  10                  15

Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly
             20                  25                  30

Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ala Ser Ser Glu Arg
         35                  40                  45

Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys
     50                  55                  60

Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp
 65                  70                  75                  80

Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp
                 85                  90                  95

Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile
            100                 105                 110

Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp
        115                 120                 125

Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
    130                 135                 140

Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser
145                 150                 155                 160

Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu
                165                 170                 175

Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Gln Gln Pro Phe
            180                 185                 190

Ser Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
        195                 200                 205

Met Pro Asp Lys Ala Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala
    210                 215                 220

Pro Gly Ala Ile Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Gly
225                 230                 235                 240
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Pro Asp Glu Gln Ser Leu His Pro Trp Glu Gln Asp Leu Leu Lys Lys
                245                 250                 255

Ile Cys Asp Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ser Asp Tyr
            260                 265                 270

Val Lys Leu Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Ser Glu Asp
        275                 280                 285

Trp Ser Arg Phe Val Ala Pro Phe Trp Pro Ala Val Ile Arg Ser Ala
    290                 295                 300

Phe Thr Trp Lys Gly Leu Ser Ser Leu Leu Ser Ser Gly Gln Lys Thr
305                 310                 315                 320

Ile Lys Gly Ala Leu Ala Met Pro Leu Met Ile Glu Gly Tyr Lys Lys
                325                 330                 335

Asp Leu Ile Lys Phe Ala Ile Ile Thr Cys Arg Lys Pro Glu
            340                 345                 350
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<210> 29
<211> 1257
<212> DNA
<213> Triticum aestivum

<220>
<221> unsure
<222> (31)

<220>
<221> unsure
<222> (151)

<400> 29

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ggcctgtcct gccgctcctc ccggccagac ngctccgtgc gcccgatggc gtcgtcgacg  180
accgcggccc gggcgacgcg gcgccgccgg ggctgaagga gggcatcgcg gggctctacg  240
acgagtcgtc cggcctgtgg gagagcatct ggggcgagca catgcaccac ggcttctacg  300
actccggcga ggccgcctcc atgtccgacc accgccgcgc ccagatccgc atgatcgagg  360
aggccctcgc cttcgccgcc gtccccgacg atccgacaaa caaacccaaa acgattgttg  420
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ggtgccatag gaacctcgcg ccgtcggagg actcactgaa acctgacgag ctgaatcttt  780
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aaggagaacc tgaggccgca tcgcccagtg tagaatagaa cccatgtgat tggaatagac 1140
tcggcttgct gtcgcctcgt agctgaataa ttttgtgtta ccgtgcctct ctatctgcaa 1200
ctggaagtgg cataggaaag tggttcctaa agcaaaaaaa aaaaaaaaaa aaaaaaa    1257
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<210> 30
<211> 366

<212> PRT
<213> Triticum aestivum

<220>
<221> UNSURE
<222> (5)

<220>
<221> UNSURE
<222> (45)

<400> 30

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Met Ala Asn Ser Xaa Arg Pro Ala Pro Leu Thr Pro Leu His Arg Leu
 1               5                  10                  15

Asp Ala Ala Pro Pro Pro Arg Pro Ser Leu Gly His Ala Ala Arg Pro
            20                  25                  30

Val Pro Arg Pro Val Leu Pro Leu Leu Pro Ala Arg Xaa Leu Arg Ala
        35                  40                  45

Pro Asp Gly Val Val Asp Asp Arg Gly Pro Gly Asp Ala Ala Pro Pro
    50                  55                  60

Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu
65                  70                  75                  80

Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ser
                85                  90                  95

Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met
            100                 105                 110

Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Pro Thr Asn
        115                 120                 125

Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser
    130                 135                 140

Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu
145                 150                 155                 160

Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly
                165                 170                 175

Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro
            180                 185                 190

Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu
        195                 200                 205

His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala
    210                 215                 220

Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu
225                 230                 235                 240

Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys
                245                 250                 255
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Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp
260 265 270

Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala
275 280 285

Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser
290 295 300

Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys
305 310 315 320

Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys
325 330 335

Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys Arg Lys Pro Gln Ala
340 345 350

Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Ser Val Glu
355 360 365

<210> 31
<211> 1605
<212> DNA
<213> Catalpa sp.

<400> 31
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caagcagacg accacttccg ccaccgccgc ggacgggtcc aaagatgcgc atgcagaatt 180
caagctggtg ggcttcaaga atttcgtcag gaccaacccc aagtccgacc acttctgcgt 240
ccaccgcttc caccatatag agttctggtg cggcgacgcc accaacaccg ccaagcgctt 300
ctcttggggc ctcggtatgc ccctcgtcgc caaatcggat ctttccactg gaaactccgc 360
tcatgcctcg tatcttcttc ggtctggcga actcaacttc ctcttcacga gcccttactc 420
tccttcaatc tccgcccccc cctccgccgc catccccagt ttctccttct ccacctacca 480
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cttttcggct tactctgcct ccatttcccg cggcgccaaa cccgtgtccg caccgattct 600
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gcctgtggat gatcagatgt cttataaaga attggattat gggattagaa ggctagatca 780
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gtttcatgaa tttgcagagt ttacttcaga ggatgtggga acagcagaaa gtggattgaa 900
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tgggaccaag aggaagagcc agattcagac ttatttggag cacaatgaag ggccaggtgt 1020
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gagtggagtt gggggattcg agttcatgcc ttcgcctccg cttacttatt acaagaatct 1140
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gatcttggtg gacagggatg atcaggggac tttgcttcag attttcacca agcctgtggg 1260
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acaaggaaag ctctaccaga agagtggttg tggaggattt ggaaagggca acttctccga 1380
actcttcaaa tccatcgaag aatacgagaa aatgctcgaa gcaaagcaag tcactgaaac 1440
agcgtcggcc tgagttctga gtccttccta ctgtgttgta gatatgttga tgaaccaatg 1500
tcctgtcggg acataggttg ttcttatgct gtactaaact gtagttgaca agaagtttta 1560
cttaataata tatcgtactt tctataaaaa aaaaaaaaaa aaaaa 1605

<210> 32
<211> 445
<212> PRT
<213> Catalpa sp.

<400> 32

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Met Gly Lys Gln Thr Thr Thr Ser Ala Thr Ala Ala Asp Gly Ser Lys
 1               5                  10                  15

Asp Ala His Ala Glu Phe Lys Leu Val Gly Phe Lys Asn Phe Val Arg
            20                  25                  30

Thr Asn Pro Lys Ser Asp His Phe Cys Val His Arg Phe His His Ile
        35                  40                  45

Glu Phe Trp Cys Gly Asp Ala Thr Asn Thr Ala Lys Arg Phe Ser Trp
    50                  55                  60

Gly Leu Gly Met Pro Leu Val Ala Lys Ser Asp Leu Ser Thr Gly Asn
65                  70                  75                  80

Ser Ala His Ala Ser Tyr Leu Leu Arg Ser Gly Glu Leu Asn Phe Leu
                85                  90                  95

Phe Thr Ser Pro Tyr Ser Pro Ser Ile Ser Ala Pro Ser Ser Ala Ala
            100                 105                 110

Ile Pro Ser Phe Ser Phe Ser Thr Tyr Gln Ser Phe Thr Ser Ser His
        115                 120                 125

Gly Leu Ala Val Arg Ala Val Ala Ile Gln Val Asp Ser Ala Phe Ser
    130                 135                 140

Ala Tyr Ser Ala Ser Ile Ser Arg Gly Ala Lys Pro Val Ser Ala Pro
145                 150                 155                 160

Ile Leu Leu Ser Asp Asn Lys Thr Ala Ile Ala Glu Val His Leu Tyr
                165                 170                 175

Gly Asp Ser Val Leu Arg Phe Val Ser Tyr Gly Asp Asn Gly Thr Gly
            180                 185                 190

Pro Asp Gly Trp Phe Leu Pro Gly Phe Glu Pro Val Asp Asp Gln Met
        195                 200                 205

Ser Tyr Lys Glu Leu Asp Tyr Gly Ile Arg Arg Leu Asp His Ala Val
    210                 215                 220

Gly Asn Val Pro Glu Leu Gly Pro Val Val Asp Tyr Leu Lys Lys Phe
225                 230                 235                 240

Thr Gly Phe His Glu Phe Ala Glu Phe Thr Ser Glu Asp Val Gly Thr
                245                 250                 255

Ala Glu Ser Gly Leu Asn Ser Met Val Leu Ala Asn Asn Asn Glu Asn
            260                 265                 270

Val Leu Leu Pro Leu Asn Glu Pro Val Phe Gly Thr Lys Arg Lys Ser
        275                 280                 285

Gln Ile Gln Thr Tyr Leu Glu His Asn Glu Gly Pro Gly Val Gln His
    290                 295                 300

Leu Ala Leu Val Ser Glu Asp Ile Phe Asn Thr Leu Arg Glu Met Arg
305                 310                 315                 320
```

```
Lys Arg Ser Gly Val Gly Gly Phe Glu Phe Met Pro Ser Pro Pro Leu
                325                 330                 335

Thr Tyr Tyr Lys Asn Leu Lys Asn Arg Ala Gly Asp Val Leu Arg Asp
            340                 345                 350

Glu Gln Ile Glu Glu Cys Glu Lys Leu Gly Ile Leu Val Asp Arg Asp
        355                 360                 365

Asp Gln Gly Thr Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg
    370                 375                 380

Pro Thr Leu Phe Ile Glu Ile Ile Gln Arg Ile Gly Cys Met Leu Lys
385                 390                 395                 400

Asp Glu Gln Gly Lys Leu Tyr Gln Lys Ser Gly Cys Gly Gly Phe Gly
                405                 410                 415

Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys
            420                 425                 430

Met Leu Glu Ala Lys Gln Val Thr Glu Thr Ala Ser Ala
        435                 440                 445
```

<210> 33
<211> 1106
<212> DNA
<213> Oryza sativa

<400> 33

```
gcacgaggaa gagctacggc ctccgccggt tcgaccacgt cgtcggcaac gtgccggagc   60
tcgctccggt agccgcgtac atctccgggt tcaccgggtt ccacgagttc gccgagttca  120
ccgccgagga cgtgggcacc gccgagagcg gcctcaactc ggtggtgctc gccaacaacg  180
cggagaccgt gctgctgccg ctcaacgagc cggtgcacgg caccaagcgg cggagccaga  240
tacagacgta cctggaccac cacggcggcc cgggggtgca gcacatcgcg ctggccagcg  300
acgacgtgct cgggacgctg agggagatgc gggcgcgctc cgccatgggc ggcttcgagt  360
tcttggcgcc gccgccgccc aactactacg acggcgtgcg gcggcgcgcc ggggacgtgc  420
tctcggagga gcagatcaac gagtgccagg agctcggggt gctcgtggac agggatgacc  480
aggggtgtt gctccagatc ttcaccaagc cagtaggaga caggccaacc tttttcttgg  540
agatgataca aaggattggg tgcatggaga aggatgagag tgggcaggag taccagaagg  600
gcggctgcgg cgggtttggg aagggcaact tctcggagct gttcaagtcc attgaggagt  660
atgagaaatc ccttgaagcc aagcaagccc ctacagttca aggatcctag gtaggaactg  720
gaggcctgga gcaacagatg taaccagtgt atttgtatta tggagcagaa gaaaaaagat  780
gtgctttcac tgctttgtga tatgtgtcat gcaagttgat gttgtaattt gtggaagctg  840
aagacaaatg atggtacaat cactgtaata gataatagac atggatcaca tacaagaatg  900
taacctagtg ttggcattgc tgctgtacaa tcttgcttgg aaataaaata ataatcaacc  960
tggagaaaga atgtaaccta ctgttggcat tgctgatgta caatcttttt ttggaaataa 1020
aataagaatc ccccccaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1080
aaaaaaaaaa aaaaaaaaaa aaaaaa                                      1106
```

<210> 34
<211> 235
<212> PRT
<213> Oryza sativa

<400> 34

```
Thr Arg Lys Ser Tyr Gly Leu Arg Arg Phe Asp His Val Val Gly Asn
  1               5                  10                  15
```

```
Val Pro Glu Leu Ala Pro Val Ala Ala Tyr Ile Ser Gly Phe Thr Gly
            20                  25                  30

Phe His Glu Phe Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu
        35                  40                  45

Ser Gly Leu Asn Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu
    50                  55                  60

Leu Pro Leu Asn Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile
65                  70                  75                  80

Gln Thr Tyr Leu Asp His His Gly Gly Pro Gly Val Gln His Ile Ala
                85                  90                  95

Leu Ala Ser Asp Asp Val Leu Gly Thr Leu Arg Glu Met Arg Ala Arg
            100                 105                 110

Ser Ala Met Gly Gly Phe Glu Phe Leu Ala Pro Pro Pro Pro Asn Tyr
        115                 120                 125

Tyr Asp Gly Val Arg Arg Arg Ala Gly Asp Val Leu Ser Glu Glu Gln
    130                 135                 140

Ile Asn Glu Cys Gln Glu Leu Gly Val Leu Val Asp Arg Asp Asp Gln
145                 150                 155                 160

Gly Val Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr
                165                 170                 175

Phe Phe Leu Glu Met Ile Gln Arg Ile Gly Cys Met Glu Lys Asp Glu
            180                 185                 190

Ser Gly Gln Glu Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly
        195                 200                 205

Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Ser Leu
    210                 215                 220

Glu Ala Lys Gln Ala Pro Thr Val Gln Gly Ser
225                 230                 235
```

<210> 35
<211> 1550
<212> DNA
<213> Glycine max

<400> 35

```
tcacaccaca ccaatgccaa tacccatgtg caacgaaatt caagcccaag cccaagccca   60
agcccaagcc caacctgggt ttaagctcgt cggtttcaaa aacttcgtcc gaaccaatcc  120
taagtcggac cgctttcaag tcaaccgctt ccaccacatc gagttctggt gcaccgatgc  180
caccaacgcc tctcgccgat tctcttgggg acttggaatg cctattgtgg caaaatctga  240
tctctccacc ggaaaccaaa tccacgcctc ctacctcctc cgctccggcg acctctcctt  300
cctcttctcc gctccttact ctccctctct ctccgccggc tcctccgctg cctcctccgc  360
ctccattccc agtttcgacg ccgccacctg ccttgccttc gctgccaaac acggcttcgg  420
cgtccgcgcc atcgccttgg aagtcgccga cgcggaagcc gctttcagcg ccagcgtcgc  480
gaaaggagcc gagccggcgt cgccgccggt tctcgtcgac gatcgcaccg gcttcgcgga  540
ggtgcgcctc tacggcgacg tggtgctccg ctacgtcagc tacaaggacg ccgcgccgca  600
ggcgccacac gcagatccgt cgcggtggtt cctgccggga ttcgaggccg cggcgtcgtc  660
gtcttcgttt ccggagctgg actacgggat ccggcggctg gaccacgccg tcgggaacgt  720
```

tccggagctg gcgccggcgg tgaggtacct gaaaggcttc agcggattcc acgagttcgc 780
ggagttcacc gcggaggacg tgggaacgag cgagagcggg ttgaactcgg tggttctggc 840
gaacaactcg gagacggtgt tgctgccgct gaacgagccg gtttacggaa cgaagaggaa 900
gagccagatt gagacgtatt tggaacacaa cgaaggtgct ggtgtgcagc accttgcgct 960
tgttactcac gacatcttca ccacactgag agagatgaga aagcgaagtt tccttggtgg 1020
atttgagttc atgccttctc ctcctcccac ctattacgcc aacctccaca accgtgccgc 1080
tgatgtgttg accgttgacc agattaagca gtgtgaggag cttgggattc ttgttgacag 1140
agatgatcag ggcactctgc ttcagatttt caccaagcct gttggggaca ggccaacgat 1200
attcatagag ataattcaga ggatcgggtg catggtggag gatgaggaag ggaaggtgta 1260
ccagaagggt gcatgtgggg gttttgggaa aggcaatttt tctgagcttt tcaaatccat 1320
tgaagaatat gagaagactt tggaagctaa aagaaccgcg taagcacatt ggaagaacac 1380
aaatactcct ttgttgaaat gattaatgag gaatcaatgt ggcatagggt gtttatactc 1440
tataatacat agaattacaa tgatagtgtc ctcccttgta tgaaaatgaa atcacagaaa 1500
cttttatgga tagtattttt ctattaaaaa aaaaaaaaaa aaaaaaaaaa 1550

<210> 36
<211> 449
<212> PRT
<213> Glycine max

<400> 36

```
Met Pro Ile Pro Met Cys Asn Glu Ile Gln Ala Gln Ala Gln Ala Gln
  1               5                  10                  15

Ala Gln Ala Gln Pro Gly Phe Lys Leu Val Gly Phe Lys Asn Phe Val
             20                  25                  30

Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His
         35                  40                  45

Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser
     50                  55                  60

Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly
 65                  70                  75                  80

Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe
                 85                  90                  95

Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala
            100                 105                 110

Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala
        115                 120                 125

Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val
    130                 135                 140

Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu
145                 150                 155                 160

Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu
                165                 170                 175

Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp
            180                 185                 190

Ala Ala Pro Gln Ala Pro His Ala Asp Pro Ser Arg Trp Phe Leu Pro
        195                 200                 205
```

```
Gly Phe Glu Ala Ala Ala Ser Ser Ser Ser Phe Pro Glu Leu Asp Tyr
    210                 215                 220

Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
225                 230                 235                 240

Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala
                245                 250                 255

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser
            260                 265                 270

Val Val Leu Ala Asn Asn Ser Glu Thr Val Leu Leu Pro Leu Asn Glu
        275                 280                 285

Pro Val Tyr Gly Thr Lys Arg Lys Ser Gln Ile Glu Thr Tyr Leu Glu
    290                 295                 300

His Asn Glu Gly Ala Gly Val Gln His Leu Ala Leu Val Thr His Asp
305                 310                 315                 320

Ile Phe Thr Thr Leu Arg Glu Met Arg Lys Arg Ser Phe Leu Gly Gly
                325                 330                 335

Phe Glu Phe Met Pro Ser Pro Pro Pro Thr Tyr Tyr Ala Asn Leu His
            340                 345                 350

Asn Arg Ala Ala Asp Val Leu Thr Val Asp Gln Ile Lys Gln Cys Glu
        355                 360                 365

Glu Leu Gly Ile Leu Val Asp Arg Asp Asp Gln Gly Thr Leu Leu Gln
    370                 375                 380

Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr Ile Phe Ile Glu Ile
385                 390                 395                 400

Ile Gln Arg Ile Gly Cys Met Val Glu Asp Glu Glu Gly Lys Val Tyr
                405                 410                 415

Gln Lys Gly Ala Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu
            420                 425                 430

Phe Lys Ser Ile Glu Glu Tyr Glu Lys Thr Leu Glu Ala Lys Arg Thr
        435                 440                 445

Ala
```

<210> 37
<211> 1614
<212> DNA
<213> Triticum aestivum

<400> 37
gcacgagcaa gaagcgaaca cacaccatgc cgcccacccc caccaccccc gcagccaccg 60
gcgccgccgc ggtgacgccg gagcacgcgc ggccgcgccg aatggtccgc ttcaacccgc 120
gcagcgaccg cttccacacg ctcgccttcc accacgtcga gttctggtgc gcggacgccg 180
cctccgccgc cggccgcttc gccttcgcgc tcggcgcgcc gctcgccgcc aggtccgacc 240
tctccacggg gaactccgtg cacgcctccc agctgctccg ctcgggcaac ctcgccttcc 300
tcttcacggc cccctacgcc aacggctgcg acgccgccac cgcctccctg ccctccttct 360

```
ccgccgacgc cgcgcgccag ttctccgcgg accacggcct cgcggtgcgc tccatagcgc  420
tgcgcgtcgc ggacgctgcc gaggccttcc gcgccagcgt cgacgggggc gcgcgcccgg  480
ccttcagccc tgtggacctc ggccgcggct tcggcttcgc ggaggtcgag ctctacggcg  540
acgtcgtgct ccgcttcgtc agccacccgg acggcaggga cgtgcccttc ttgccggggt  600
tcgagggcgt gagcaaccca gacgccgtgg actacggcct gacgcggttc gaccacgtcg  660
tcggcaacgt cccggagctt gcccccgccg cggcctacgt cgccgggttc acggggttcc  720
acgagttcgc cgagttcacg acggaggacg tgggcacggc cgagagcggg ctcaactcga  780
tggtgctcgc caacaactcg gagggcgtgc tgctgccgct caacgagccg gtgcacggca  840
ccaagcgccg gagccagata cagacgttcc tggaacacca cggcggctcg ggcgtgcagc  900
acatcgcggt ggccagcagc gacgtgctca ggacgctcag ggagatgcgt gcgcgctccg  960
ccatgggcgg cttcgacttc ctgccacccc cgctgccgaa gtactacgaa ggcgtgcggc 1020
gcatcgccgg ggatgtgctc tcggaggcgc agatcaagga atgccaggag ctgggggtgc 1080
tcgtcgacag ggacgaccaa ggggtgttgc tacaaatctt caccaagcca gtaggggaca 1140
ggccgacgtt gttcctggag atgatccaga ggatcgggtg catggagaag gacgagagag 1200
gggaagagta ccagaagggt ggctgcggcg ggttcggcaa aggcaacttc tccgagctgt 1260
tcaagtccat tgaagattac gagaagtccc ttgaagccaa gcaatctgct gcagttcagg 1320
gatcatagga tagaagctgg agctggagga gctgatccag tactttgtat caggtctcat 1380
ggagcaaaag aaaatgatgt tgtttgtaag atgcggcgcg caattatgtc cgatgttata 1440
attggtgaag ctgaagacag atgtatccta tgtatgatgg gtgtaataga tggtagaggg 1500
ggctcggctc acacatgaac aaaatgtact gttggcattg ttgtataatc ttgcttgcaa 1560
gtaaaataaa gaagaaccga ttttgagttc tgcatcaaaa aaaaaaaaaa aaaa        1614
```

<210> 38
<211> 433
<212> PRT
<213> Triticum aestivum

<400> 38

```
Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Val
  1               5                  10                  15

Thr Pro Glu His Ala Arg Pro Arg Arg Met Val Arg Phe Asn Pro Arg
             20                  25                  30

Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
         35                  40                  45

Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
     50                  55                  60

Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
 65                  70                  75                  80

Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
                 85                  90                  95

Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
            100                 105                 110

Ala Asp Ala Ala Arg Gln Phe Ser Ala Asp His Gly Leu Ala Val Arg
        115                 120                 125

Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
    130                 135                 140

Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
145                 150                 155                 160

Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
                165                 170                 175
```

```
Phe Val Ser His Pro Asp Gly Arg Asp Val Pro Phe Leu Pro Gly Phe
            180                 185                 190

Glu Gly Val Ser Asn Pro Asp Ala Val Asp Tyr Gly Leu Thr Arg Phe
        195                 200                 205

Asp His Val Val Gly Asn Val Pro Glu Leu Ala Pro Ala Ala Ala Tyr
    210                 215                 220

Val Ala Gly Phe Thr Gly Phe His Glu Phe Ala Glu Phe Thr Thr Glu
225                 230                 235                 240

Asp Val Gly Thr Ala Glu Ser Gly Leu Asn Ser Met Val Leu Ala Asn
                245                 250                 255

Asn Ser Glu Gly Val Leu Leu Pro Leu Asn Glu Pro Val His Gly Thr
            260                 265                 270

Lys Arg Arg Ser Gln Ile Gln Thr Phe Leu Glu His His Gly Gly Ser
        275                 280                 285

Gly Val Gln His Ile Ala Val Ala Ser Ser Asp Val Leu Arg Thr Leu
    290                 295                 300

Arg Glu Met Arg Ala Arg Ser Ala Met Gly Gly Phe Asp Phe Leu Pro
305                 310                 315                 320

Pro Pro Leu Pro Lys Tyr Tyr Glu Gly Val Arg Arg Ile Ala Gly Asp
                325                 330                 335

Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu Gly Val Leu
            340                 345                 350

Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe Thr Lys Pro
        355                 360                 365

Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln Arg Ile Gly
    370                 375                 380

Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys Gly Gly Cys
385                 390                 395                 400

Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu
                405                 410                 415

Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala Val Gln Gly
            420                 425                 430

Ser
```

<210> 39
<211> 317
<212> PRT
<213> Synechocystis sp.

<400> 39

```
Met Val Tyr His Val Arg Pro Lys His Ala Leu Phe Leu Ala Phe Tyr
  1               5                  10                  15
```

```
Cys Tyr Phe Ser Leu Leu Thr Met Ala Ser Ala Thr Ile Ala Ser Ala
                20                  25                  30

Asp Leu Tyr Glu Lys Ile Lys Asn Phe Tyr Asp Asp Ser Ser Gly Leu
            35                  40                  45

Trp Glu Asp Val Trp Gly Glu His Met His His Gly Tyr Tyr Gly Pro
        50                  55                  60

His Gly Thr Tyr Arg Ile Asp Arg Arg Gln Ala Gln Ile Asp Leu Ile
65                  70                  75                  80

Lys Glu Leu Leu Ala Trp Ala Val Pro Gln Asn Ser Ala Lys Pro Arg
                85                  90                  95

Lys Ile Leu Asp Leu Gly Cys Gly Ile Gly Gly Ser Ser Leu Tyr Leu
            100                 105                 110

Ala Gln Gln His Gln Ala Glu Val Met Gly Ala Ser Leu Ser Pro Val
        115                 120                 125

Gln Val Glu Arg Ala Gly Glu Arg Ala Arg Ala Leu Gly Leu Gly Ser
    130                 135                 140

Thr Cys Gln Phe Gln Val Ala Asn Ala Leu Asp Leu Pro Phe Ala Ser
145                 150                 155                 160

Asp Ser Phe Asp Trp Val Trp Ser Leu Glu Ser Gly Glu His Met Pro
                165                 170                 175

Asn Lys Ala Gln Phe Leu Gln Glu Ala Trp Arg Val Leu Lys Pro Gly
            180                 185                 190

Gly Arg Leu Ile Leu Ala Thr Trp Cys His Arg Pro Ile Asp Pro Gly
        195                 200                 205

Asn Gly Pro Leu Thr Ala Asp Glu Arg Arg His Leu Gln Ala Ile Tyr
    210                 215                 220

Asp Val Tyr Cys Leu Pro Tyr Val Val Ser Leu Pro Asp Tyr Glu Ala
225                 230                 235                 240

Ile Ala Arg Glu Cys Gly Phe Gly Glu Ile Lys Thr Ala Asp Trp Ser
                245                 250                 255

Val Ala Val Ala Pro Phe Trp Asp Arg Val Ile Glu Ser Ala Phe Asp
            260                 265                 270

Pro Arg Val Leu Trp Ala Leu Gly Gln Ala Gly Pro Lys Ile Ile Asn
        275                 280                 285

Ala Ala Leu Cys Leu Arg Leu Met Lys Trp Gly Tyr Glu Arg Gly Leu
    290                 295                 300

Val Arg Phe Gly Leu Leu Thr Gly Ile Lys Pro Leu Val
305                 310                 315
```

<210> 40
<211> 348

<212> PRT
<213> Arabidopsis thaliana

<400> 40

```
Met Lys Ala Thr Leu Ala Ala Pro Ser Ser Leu Thr Ser Leu Pro Tyr
 1               5                  10                  15

Arg Thr Asn Ser Ser Phe Gly Ser Lys Ser Ser Leu Leu Phe Arg Ser
            20                  25                  30

Pro Ser Ser Ser Ser Ser Val Ser Met Thr Thr Thr Arg Gly Asn Val
        35                  40                  45

Ala Val Ala Ala Ala Ala Thr Ser Thr Glu Ala Leu Arg Lys Gly Ile
    50                  55                  60

Ala Glu Phe Tyr Asn Glu Thr Ser Gly Leu Trp Glu Glu Ile Trp Gly
65                  70                  75                  80

Asp His Met His His Gly Phe Tyr Asp Pro Asp Ser Ser Val Gln Leu
                85                  90                  95

Ser Asp Ser Gly His Lys Glu Ala Gln Ile Arg Met Ile Glu Glu Ser
            100                 105                 110

Leu Arg Phe Ala Gly Val Thr Asp Glu Glu Glu Glu Lys Lys Ile Lys
        115                 120                 125

Lys Val Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Tyr Leu
    130                 135                 140

Ala Ser Lys Phe Gly Ala Glu Cys Ile Gly Ile Thr Leu Ser Pro Val
145                 150                 155                 160

Gln Ala Lys Arg Ala Asn Asp Leu Ala Ala Ala Gln Ser Leu Ser His
                165                 170                 175

Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Asp Gln Pro Phe Glu Asp
            180                 185                 190

Gly Lys Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His Met Pro
        195                 200                 205

Asp Lys Ala Lys Phe Val Lys Glu Leu Val Arg Val Ala Ala Pro Gly
    210                 215                 220

Gly Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Ser Ala Gly
225                 230                 235                 240

Glu Glu Ala Leu Gln Pro Trp Glu Gln Asn Ile Leu Asp Lys Ile Cys
                245                 250                 255

Lys Thr Phe Tyr Leu Pro Ala Trp Cys Ser Thr Asp Asp Tyr Val Asn
            260                 265                 270

Leu Leu Gln Ser His Ser Leu Gln Asp Ile Lys Cys Ala Asp Trp Ser
        275                 280                 285

Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Arg Thr Ala Leu Thr
    290                 295                 300
```

```
Trp Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys
305                 310                 315                 320

Gly Ala Leu Thr Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val
                325                 330                 335

Ile Lys Phe Gly Ile Ile Thr Cys Gln Lys Pro Leu
            340                 345
```

<210> 41
<211> 434
<212> PRT
<213> Hordeum vulgare

<400> 41

```
Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Ala
  1               5                  10                  15

Val Thr Pro Glu His Ala Arg Pro His Arg Met Val Arg Phe Asn Pro
            20                  25                  30

Arg Ser Asp Arg Phe His Thr Leu Ser Phe His His Val Glu Phe Trp
        35                  40                  45

Cys Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly
    50                  55                  60

Ala Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Ala His
65                  70                  75                  80

Ala Ser Gln Leu Leu Arg Ser Gly Ser Leu Ala Phe Leu Phe Thr Ala
                85                  90                  95

Pro Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe
            100                 105                 110

Ser Ala Asp Ala Ala Arg Arg Phe Ser Ala Asp His Gly Ile Ala Val
        115                 120                 125

Arg Ser Val Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala
    130                 135                 140

Ser Arg Arg Arg Gly Ala Arg Pro Ala Phe Ala Pro Val Asp Leu Gly
145                 150                 155                 160

Arg Gly Phe Ala Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu
                165                 170                 175

Arg Phe Val Ser His Pro Asp Gly Thr Asp Val Pro Phe Leu Pro Gly
            180                 185                 190

Phe Glu Gly Val Thr Asn Pro Asp Ala Val Asp Tyr Gly Leu Thr Arg
        195                 200                 205

Phe Asp His Val Val Gly Asn Val Pro Glu Leu Ala Pro Ala Ala Ala
    210                 215                 220

Tyr Ile Ala Gly Phe Thr Gly Phe His Glu Phe Ala Glu Phe Thr Ala
225                 230                 235                 240
```

```
Glu Asp Val Gly Thr Thr Glu Ser Gly Leu Asn Ser Val Val Leu Ala
                245                 250                 255

Asn Asn Ser Glu Gly Val Leu Leu Pro Leu Asn Glu Pro Val His Gly
            260                 265                 270

Thr Lys Arg Arg Ser Gln Ile Gln Thr Phe Leu Glu His His Gly Gly
        275                 280                 285

Pro Gly Val Gln His Ile Ala Val Ala Ser Ser Asp Val Leu Arg Thr
    290                 295                 300

Leu Arg Lys Met Arg Ala Arg Ser Ala Met Gly Gly Phe Asp Phe Leu
305                 310                 315                 320

Pro Pro Pro Leu Pro Lys Tyr Tyr Glu Gly Val Arg Arg Leu Ala Gly
                325                 330                 335

Asp Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu Gly Val
            340                 345                 350

Leu Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe Thr Lys
        355                 360                 365

Pro Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln Arg Ile
    370                 375                 380

Gly Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys Gly Gly
385                 390                 395                 400

Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile
                405                 410                 415

Glu Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala Val Gln
            420                 425                 430

Gly Ser
```

<210> 42
<211> 442
<212> PRT
<213> Daucus carota

<400> 42

```
Met Gly Lys Lys Gln Ser Glu Ala Glu Ile Leu Ser Ser Asn Ser Ser
  1               5                  10                  15

Asn Thr Ser Pro Ala Thr Phe Lys Leu Val Gly Phe Asn Asn Phe Val
            20                  25                  30

Arg Ala Asn Pro Lys Ser Asp His Phe Ala Val Lys Arg Phe His His
        35                  40                  45

Ile Glu Phe Trp Cys Gly Asp Ala Thr Asn Thr Ser Arg Arg Phe Ser
    50                  55                  60

Trp Gly Leu Gly Met Pro Leu Val Ala Lys Ser Asp Leu Ser Thr Gly
65                  70                  75                  80
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Asn Ser Val His Ala Ser Tyr Leu Val Arg Ser Ala Asn Leu Ser Phe
                  85                  90                  95

Val Phe Thr Ala Pro Tyr Ser Pro Ser Thr Thr Thr Ser Ser Gly Ser
             100                 105                 110

Ala Ala Ile Pro Ser Phe Ser Ala Ser Gly Phe His Ser Phe Ala Ala
         115                 120                 125

Lys His Gly Leu Ala Val Arg Ala Ile Ala Leu Glu Val Ala Asp Val
     130                 135                 140

Ala Ala Ala Phe Glu Ala Ser Val Ala Arg Gly Ala Arg Pro Ala Ser
145                 150                 155                 160

Ala Pro Val Glu Leu Asp Asp Gln Ala Trp Leu Ala Glu Val Glu Leu
                165                 170                 175

Tyr Gly Asp Val Val Leu Arg Phe Val Ser Phe Gly Arg Glu Glu Gly
            180                 185                 190

Leu Phe Leu Pro Gly Phe Glu Ala Val Glu Gly Thr Ala Ser Phe Pro
        195                 200                 205

Asp Leu Asp Tyr Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val
    210                 215                 220

Thr Glu Leu Gly Pro Val Val Glu Tyr Ile Lys Gly Phe Thr Gly Phe
225                 230                 235                 240

His Glu Phe Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Leu Glu Ser
                245                 250                 255

Gly Leu Asn Ser Val Val Leu Ala Asn Asn Glu Glu Met Val Leu Leu
            260                 265                 270

Pro Leu Asn Glu Pro Val Tyr Gly Thr Lys Arg Lys Ser Gln Ile Gln
        275                 280                 285

Thr Tyr Leu Glu His Asn Glu Gly Ala Gly Val Gln His Leu Ala Leu
    290                 295                 300

Val Ser Glu Asp Ile Phe Arg Thr Leu Arg Glu Met Arg Lys Arg Ser
305                 310                 315                 320

Cys Leu Gly Gly Phe Glu Phe Met Pro Ser Pro Pro Pro Thr Tyr Tyr
                325                 330                 335

Lys Asn Leu Lys Asn Arg Val Gly Asp Val Leu Ser Asp Glu Gln Ile
            340                 345                 350

Lys Glu Cys Glu Asp Leu Gly Ile Leu Val Asp Arg Asp Asp Gln Gly
        355                 360                 365

Thr Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr Leu
    370                 375                 380

Phe Ile Glu Ile Ile Gln Arg Val Gly Cys Met Leu Lys Asp Asp Ala
385                 390                 395                 400
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Gly Gln Met Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly Asn
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Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Thr Leu Glu
420 425 430

Ala Lys Gln Ile Thr Gly Ser Ala Ala Ala
435 440

<210> 43
<211> 445
<212> PRT
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<400> 43
Met Gly His Gln Asn Ala Ala Val Ser Glu Asn Gln Asn His Asp Asp
1 5 10 15

Gly Ala Ala Ser Ser Pro Gly Phe Lys Leu Val Gly Phe Ser Lys Phe
20 25 30

Val Arg Lys Asn Pro Lys Ser Asp Lys Phe Lys Val Lys Arg Phe His
35 40 45

His Ile Glu Phe Trp Cys Gly Asp Ala Thr Asn Val Ala Arg Arg Phe
50 55 60

Ser Trp Gly Leu Gly Met Arg Phe Ser Ala Lys Ser Asp Leu Ser Thr
65 70 75 80

Gly Asn Met Val His Ala Ser Tyr Leu Leu Thr Ser Gly Asp Leu Arg
85 90 95

Phe Leu Phe Thr Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Glu Ile
100 105 110

Lys Pro Thr Thr Thr Ala Ser Ile Pro Ser Phe Asp His Gly Ser Cys
115 120 125

Arg Ser Phe Phe Ser Ser His Gly Leu Gly Val Arg Ala Val Ala Ile
130 135 140

Glu Val Glu Asp Ala Glu Ser Ala Phe Ser Ile Ser Val Ala Asn Gly
145 150 155 160

Ala Ile Pro Ser Ser Pro Pro Ile Val Leu Asn Glu Ala Val Thr Ile
165 170 175

Ala Glu Val Lys Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr
180 185 190

Lys Ala Glu Asp Thr Glu Lys Ser Glu Phe Leu Pro Gly Phe Glu Arg
195 200 205

Val Glu Asp Ala Ser Ser Phe Pro Leu Asp Tyr Gly Ile Arg Arg Leu
210 215 220

Asp His Ala Val Gly Asn Val Pro Glu Leu Gly Pro Ala Leu Thr Tyr
225 230 235 240

```
Val Ala Gly Phe Thr Gly Phe His Gln Phe Ala Glu Phe Thr Ala Asp
                245                 250                 255

Asp Val Gly Thr Ala Glu Ser Gly Leu Asn Ser Ala Val Leu Ala Ser
            260                 265                 270

Asn Asp Glu Met Val Leu Leu Pro Ile Asn Glu Pro Val His Gly Thr
        275                 280                 285

Lys Arg Lys Ser Gln Ile Gln Thr Tyr Leu Glu His Asn Glu Gly Ala
    290                 295                 300

Gly Leu Gln His Leu Ala Leu Met Ser Glu Asp Ile Phe Arg Thr Leu
305                 310                 315                 320

Arg Glu Met Arg Lys Arg Ser Ser Ile Gly Gly Phe Asp Phe Met Pro
                325                 330                 335

Ser Pro Pro Pro Thr Tyr Tyr Gln Asn Leu Lys Lys Arg Val Gly Asp
            340                 345                 350

Val Leu Ser Asp Asp Gln Ile Lys Glu Cys Glu Glu Leu Gly Ile Leu
        355                 360                 365

Val Asp Arg Asp Asp Gln Gly Thr Leu Leu Gln Ile Phe Thr Lys Pro
    370                 375                 380

Leu Gly Asp Arg Pro Thr Ile Phe Ile Glu Ile Ile Gln Arg Val Gly
385                 390                 395                 400

Cys Met Met Lys Asp Glu Glu Gly Lys Ala Tyr Gln Ser Gly Gly Cys
                405                 410                 415

Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu
            420                 425                 430

Glu Tyr Glu Lys Thr Leu Glu Ala Lys Gln Leu Val Gly
        435                 440                 445
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